

I Claim:

1. A system for detection of an object in an area in space comprised of an image generated by waves in one of a visible and an invisible spectral range, the system comprising:
 - an imager configured such that a holographic image is projected onto the area;
 - a reception device configured such that the reception device registers the imaged area, wherein the reception device is specifically balanced for a spectral range corresponding to the waves; and
 - a computer configured with a recognition algorithm, wherein the image area is recreated on the reception device and a difference between an image generation pattern and an image received is compared using the recognition algorithm.
2. The system according to claim 1, wherein the imager is one of a reflective solid state imaging device and a transmissive solid state imaging device.
3. The system according to claim 1, wherein the reception device is a solid state sensing device.
4. The system according to claim 1, wherein the image represents one of an input terminal, a keyboard, a pointing device, a game, and a musical instrument.
5. A method for detecting an object in an area, the method comprising the steps of:
 - generating a holographic image as a reference for user interaction with a function available thereto in the area by a computer, the image appearing in a predetermined area and being seen by the user and sensing device;
 - moving an object into the predetermined area;

using a reception device specifically balanced for the spectral range corresponding to the waves to detect the object;

matching the interference pattern imaged on the sensor with the original pattern

subtracted from the current image pattern, mathematically, globally or otherwise; and

triggering a function by the object in that the object dwells or moves in the field for a predetermined time.

6. A method for modifying an original template image to acknowledge or represent in some manner the interface with a user, the method comprising the steps of:
 - (a) detecting the movement and location of an interaction by the user;
 - (b) determining an appropriate response for the action [what action];
 - (c) regenerating the image of the template to accommodate the functionality; and
 - (d) repeating steps a-c.
7. The method according to claim 6, further comprising the step of moving a mouse pointer associated with the object across the projected area by moving a finger of a user.
8. The method according to claim 6, further comprising the step of implementing the control characteristic as one of a finger of a user, a hand of a user or a pointer.
9. The method according to claim 6, further comprising the step of implementing the control characteristic as one of a finger of a user, a hand of a user or a pointer wherein the image of the device will change in response to the user's interaction, thereby giving the user feedback of successful (or unsuccessful) interaction.
10. A circuit and/or software program, or other computing engine for calculating the relative position of said object with respect to one or more reference points, based on said processing of movement and position.

11. The device of claim 10 wherein said circuit includes a processor for applying an algorithm for calculating said movement and position of said object.

the device of claim 10 wherein said algorithm utilizes fuzzy logic.

the device of claim 10 wherein said algorithm utilizes global pattern comparison.

the device of claim 10 wherein said algorithm utilizes pattern analysis to compare features of a transformation or image.

12. The device of claim 10 further comprising an interface for connecting said device to a computer, such that said data representing the movement and position of said object can be transferred from said device to said computer via said interface.

The device of claim 13 wherein said interface is hard wired.

The device of claim 13 wherein said interface is wireless.

The device of claim 13 wherein said wireless interface is selected from a group comprising infrared, RF and microwave.